

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 27

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UNITED STATES PATENT AND TRADEMARK OFFICE

FEB 20 2002

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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AND INTERFERENCES

Ex parte PETER PFEUFFER

Appeal No. 2001-0344  
Application 08/900,254

Before PAK, OWENS and MOORE, Administrative Patent Judges.

MOORE, Administrative Patent Judge.

**DECISION ON APPEAL**

This appeal was taken from the examiner's decision rejecting claims 1 through 4, which are all of the claims pending in the application. Claims 5-8 have been canceled.

**THE INVENTION**

The invention relates to a method of manufacturing a pleated filter material.<sup>1</sup> In short, the claims recite the one-step calendering and bonding of a non-woven material

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<sup>1</sup> The preamble of claim 1, a method claim, was amended by the Applicants' representative pursuant to an Interview initiated by the Examiner on May 3, 2000 to recite "pleated" filter material. We note that there appears to be an apparent misapprehension of the terms "pleat" and "spacer" as argued in the Reply brief. If further proceedings are conducted, we would suggest that the Appellant and the Examiner should revisit this issue and establish more fully on the record the reasons for the amendment.

using a profiled calender roll. This is said to result in the bonding of the fibrous web in a "tension-free" manner without inhomogeneities or flat bonding. The resulting three-dimensional structure is said to be stable and may form the basis for a later pleating operation to form a pleated filter.

### CLAIMS ON APPEAL

1. A method for manufacturing a pleated filter material from a thermally bonded non-woven fabric, comprising:

forming a single fibrous web from drawn and undrawn synthetic fibers;

calendering only the single fibrous web in a single calendering step, wherein during the single calendering step, the undrawn fibers in the single fibrous web are bonded in a tension-free manner between profiled calender rolls to form the non-woven fabric, without inhomogeneities over the cross-section of the non-woven fabric and without the use of flat bonding, and wherein during the single calendering step, spacers are formed in the non-woven fabric to thereby form a filter material.

2. The method of claim 1, further comprising:

preheating the fibrous web and then guiding the fibrous web between heater calender rolls during the single calendering step.

3. The method of claim 1, further comprising:

preheating the fibrous web and then guiding the fibrous web between cooled calender rolls during the single calendering step.

4. The method of claim 1, further comprising:

guiding the fibrous web, unheated, between heated calender rolls during the single calendering step.

### THE REFERENCES

The prior art references relied on by the examiner are:

Norton (Norton)	2,862,542	Dec. 02, 1958
Yamamoto et al. (Yamamoto)	4,496,583	Jan. 29, 1985
Naruo et al. (Naruo)	4,876,007	Oct. 24, 1989
Meyer	5,232,595	Aug. 03, 1993

### THE REJECTIONS

The appealed claims stand rejected as follows:

Claims 1 through 4 stand rejected under 35 U.S.C. §103(a) as unpatentable over Yamamoto in view of either Meyer or Narou and Norton.

Respecting the rejection under 35 U.S.C. § 103(a), the question presented is whether the examiner established a prima facie case of obviousness.

On this record, applicants do not rely on any rebuttal evidence, i.e., objective evidence of non-obviousness, which would serve to rebut a prima facie case.

### DELIBERATIONS

Our deliberations in this matter have included evaluation and review of the instant specification and the entire prosecution history, including all of the claims on appeal; applicants' Appeal Brief (Paper No. 21); the Examiner's Answer (Paper No. 22); the Reply to Examiner's Answer (Paper No. 25); and the above-listed prior art references.

### DISPOSITION

On consideration of the record, including the above-listed materials, we affirm the examiner's prior art rejection.

## DISCUSSION

### A. Specification

As an initial matter, we note that the specification of the instant application on appeal contains a dearth of information regarding the process details for obtaining a pleatable (or pleated) filter material. At page 2, lines 18 through 21, we are told that “[t]o avoid essentially flat bonding, the fibrous web is bonded in a tension-free manner between profiled calender rolls without inhomogeneities over the cross section of the fabric.” At page 3, lines 3 through 6 we are informed that “[t]he fibrous web of the present invention is directly calendered with a three dimensional structure, without a detour using a flat calendering step, and during calendering is bonded.”

The resulting three-dimensional structure is said to have “spacers [which] are produced without changing the homogeneity of the non-woven fabric, and that even under the influence of mechanical and/or thermal stresses during the filtration operation, they do not change their shape and remain stable during the entire service life.”

This is accomplished, according to the Appellants, by using calender rolls having a sinusoidal surface feature operating at a line pressure of 20 to 60 bar for a calender width of 1.2 meters, and may be operated hot or cold (depending on whether the web is preheated) (Page 3, line 25 – page 4, line 3). The fibrous web is first formed from drawn and undrawn fibers, and calendered between the profiled rolls. We are again told that “[t]o avoid essentially flat bonding, the fibrous web is bonded in a tension-free manner between the profiled calender rolls 1 without inhomogeneities over the cross-section of the non-woven fabric.” (Page 4, line 36 to page 5, line 3).

No temperatures, suitable materials, or examples wherein the process is conducted are found within the four corners of the specification, leaving those details to be understood by the person of ordinary skill in the art.

B. The Rejection

The Examiner notes in the rejection that Yamamoto discloses forming paper-like polyester sheets of drawn and undrawn fibers and pressing the sheets using a heated calender roll (Examiner's Answer, page 4, lines 4-10). The Examiner additionally notes at page 5, lines 4 – 11 that

it would have been obvious in the art to calender the paper-like sheet using profiled calender rolls to form a pleated filter sheet in the process of Yamamoto et al because: a) Yamamoto et al discloses that the paper-like sheet can be impregnated with a resinous material, calendered, etc. (col. 5 lines 1-4); b) Norton discloses forming corrugated (pleated) paper filter by calendering a fibrous sheet using a pair of profiled calender rolls (figures 1-2); and c) it is well within the purview of choice in the art to choose from known methods based on their suitability for their intended purpose or use, none but the expected result of effectively forming a pleated filter would have been achieved.

In response, the Appellant states that the rejection is flawed in that Yamamoto teaches away from the invention, and the proposed combinations fail to disclose all of the limitations of the claims (Appeal Brief, page 3, lines 9-10).

The basic thrust of Appellants' argument is that as Yamamoto teaches that crimping of fibers is undesirable, one would then not be led to perform a calendering step such as that of Norton as it crimps the fibers. Oddly, this position is advocated even though Yamamoto expressly suggests that:

The paper-like polyester fiber sheet of the present invention may be impregnated with a resinous material, laminated with other materials, calendered, embossed, or creped. The processed paper-like sheet can be used as a pattern sheet, a leather-like sheet, a sheet for making artificial flowers, an adhesive tape, a wall

paper sheet, a backing sheet for a carpet, floor boards, a separator sheet for a lead cell and a disposable cloth (column 5, lines 1-8)(Emphasis added).

Further, we observe that the discussion of “crimping” in Examples 11 and 12 to which the Appellant refers is described as crimping of the tow material before the paper making process (see column 7, lines 20-23), not the crimping which might occur (if any) during a calendering process involving the formed sheet. Additionally, as evident in the statement in Yamamoto above, the processing to be applied can vary greatly, which of course depends on the end use of the material. We are therefore unpersuaded by the contention that Yamamoto teaches away from calendering.

Turning now to Norton, we note that the Examiner asserted that Norton teaches the desirability of corrugating filter papers for use in filtering engine oils. More specifically, we note that Norton teaches:

In filtering lubricating oils as used in automotive engines it is often found expedient to use corrugated filter paper as a clarifying medium. The paper is corrugated to increase the area of contact with the oil and this is equivalent to increasing the capacity of the filter element. Corrugation also strengthens the paper against possible deformation and rupture under the strain imposed by the flowing oil. (Column 1, lines 20-27).

The Appellant focuses his argument on the claim limitation in claim 1, which requires that, during the calendering process, the fibers be bonded. According to the Appellant, “[t]his is a feature taught in neither Yamamoto or Norton, or the other references” (Appeal Brief, page 5, lines 7-8). The Examiner has stated “it is reasonably taken that, in calendering the paper-like sheet material of Yamamoto et al. using a pair of profiled calender rolls, the fibrous web is bonded in a tension free manner.” The Appellant’s characterization is that the “Examiner’s assertion of what is “reasonably

taken” comes nowhere from the prior art” (Appeal Brief, page 5, lines 11-13); however, Appellant has undertaken no efforts to distinguish the Yamamoto or Norton processes.

The Examiner having made the prima facie case of obviousness, the burden then shifted to the Applicant to show that these elements were not present in the prior art.

See, e.g. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-4 (CCPA 1977)

Where . . . the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. Whether the rejection is based on “inherency” under 35 U.S.C. § 102, on “prima facie obviousness” under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO’s inability to manufacture products or to obtain and compare prior art products.

We return to Yamamoto, column 8, lines 37-43, to delve into the disclosure more fully. The Examiner has pointed to the Yamamoto sheets in Examples 13 and 14 (which appear to have comparable properties to the rest of the Yamamoto sheets). We note that these sheets were calendered at a working width of 50 cm under a pressure of 10 tons at a temperature of 180°C and 130°C.

Yamamoto discloses it is known to use various types of synthetic fibers in non-woven sheets, including polypropylene, acrylic, and polyvinyl alcohol fibers (col. 1, lines 20-23). Drawn polyester was specifically used as a staple fiber in Examples 13 and 14. In these examples, 4 kg of cut, the drawn polyester fibers are combined with 1 kg of apparently untreated water insoluble polyvinyl alcohol fiber binder, “each fiber having a denier of 1, a length of 3mm, and softening point of 70°C in water” (column 8, lines 24-28) and a slurry created. The slurry is mixed with 1% polyacrylamide and subjected to a paper making process before being calendered.

It is clear from Yamamoto that the paper thus formed, containing both drawn polyester staple fibers, and undrawn PVA binder fibers, when subjected to the calendering step in Yamamoto, would cause at least some of the apparently undrawn PVA fibers to bond (they soften at 70°C, and would be pressed together), and would do so in a homogeneous and tension-free manner. We therefore disagree with the Appellant's characterization that the "Examiner's assertion of what is 'reasonably taken' comes nowhere from the prior art" (Appeal Brief, page 5, lines 11-13).

Simply because the prior art does not use the word "bonding" or "tension-free" or "without inhomogeneities" in describing the prior art calendering step does not mean that bonding or the other features are absent, especially when the conditions are known to those of skill in the art as suitable for bonding and forming a sheet in a tension-free manner without inhomogeneity.

Other than stating that these features come "nowhere" from the prior art, the Appellant has done nothing to prove that these features are not inherently present in the prior art. Thus, examples 13 and 14 appear to meet all the claimed limitations in claim 1, except for the use of a profiled calender roll to form spacers and no flat bonding. The spacers and lack of flat bonding are supplied by the teachings and suggestion of Norton to improve the strength of filter material. We therefore affirm this rejection as it applies to claim 1.

The Appellant further challenges the rejection of claims 2 and 3, which recite a preheating of the fibrous web (claim 2) and preheating the fibrous web and guiding it through cooled calender rolls (claim 3). No separate argument is provided for claim 4,



which claims guiding the fibrous web, unheated, through heated calender rolls, and thus claim 4 falls with claim 1.

The Examiner has stated that "one of skill in the art would have chosen one from among limited effective known methods of calendering the fibrous web" (Examiner's Answer, page 7, lines 12-13). The Appellant has stated that "[t]he Examiner has failed to demonstrate where in any of the prior art these features may be found .... Yamamoto, alone or in combination with the other references, does not suggest the limitations in claims 2 or 3." (Appeal Brief, page 5, lines 22-26).

The question under 35 U.S.C. § 103(a) is not merely what the references expressly teach, but what they would have suggested to one of ordinary skill in the art at the time the invention was made. See Merck & Co., Inc. Biocraft Laboratories, Inc., 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989); In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). A conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in the particular reference. See In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Further, in an obviousness assessment, skill is presumed on the part of the artisan rather than lack thereof. In re Sovish, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

The Examiner has stated that one of skill in the art would have readily recognized and appreciated that in order to activate the undrawn fibers, the web must be heated. The Examiner has also stated that it was well within the purview of choice in the art from known effective methods to select one of the three alternative methods, thus meeting the burden of establishing the prima facie case of obviousness. The test for an implicit

showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art Keller, 642 F.2d at 425, 208 USPQ at 881.

The Examiner has provided particular findings on this point. See In re Dembiczak, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999).

The Appellant has offered no reasons why this would not be so.

The examiner's decision, rejecting claims 1 through 4, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

**AFFIRMED**  
**37 C.F.R. § 196(b)**

  
CHUNG K. PAK  
Administrative Patent Judge

  
TERRY J. OWENS  
Administrative Patent Judge

  
JAMES T. MOORE  
Administrative Patent Judge

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